# Agenda Item 6

Mercury Strategy – Ecosystem Restoration Program

## **Authority Action**

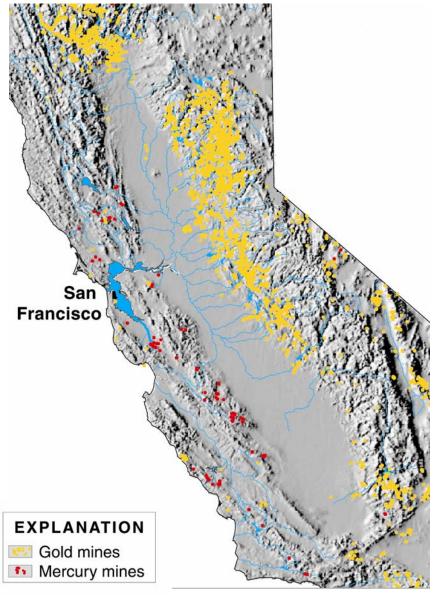
#### **Consider Resolution 04-06-03**

Directing Implementation of the Mercury Strategy for the Bay-Delta Ecosystem

# Mercury Strategy for the Bay-Delta Ecosystem

A Unifying Framework for Science, Adaptive Management, and Ecological Restoration

### Sources of Mercury



Adapted from USGS

#### Natural abundance

High in Coast Ranges Lower in Sierra Nevada

### Mining sources

Current and historic wastes from 239 known mines, most in Coast Range (inorganic Hg & MeHg)

Up to 3.6-million kg of Hg lost during precious-metal processing in Sierra Nevada during the late 1800's (Alpers & Hunerlach 2000)

### **Riverine inputs**

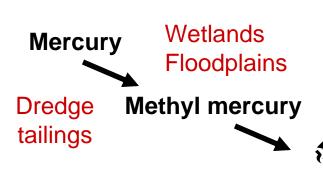
Contaminated waterways in Coastal and Sierra ranges continue to export inorganic Hg and MeHg to the Bay-Delta



# Hydraulic mining



# Why is it a problem?



Protect or restore functional habitats in the Bay-Delta estuary.



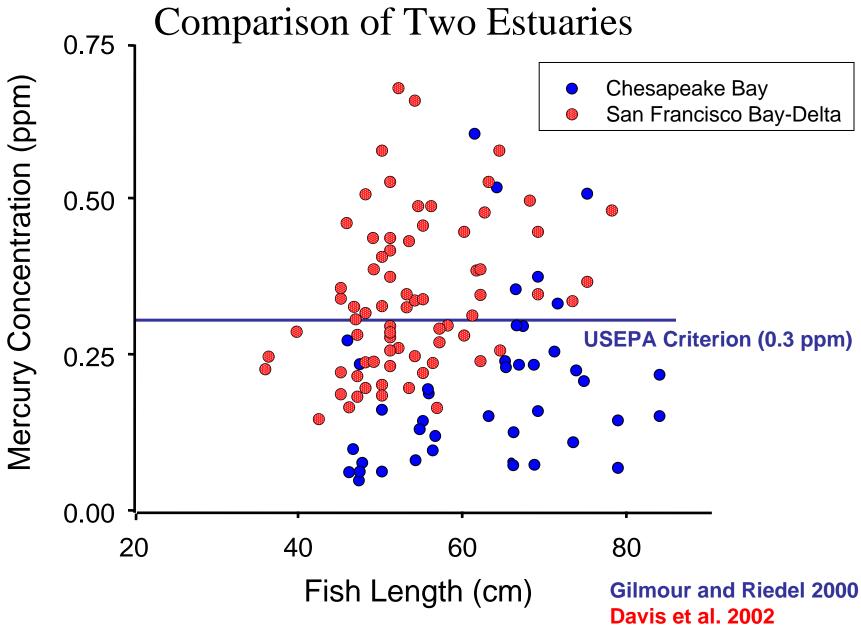
Eliminate to the extent possible toxic impacts to aquatic organisms, wildlife and people.





Neurological impairment

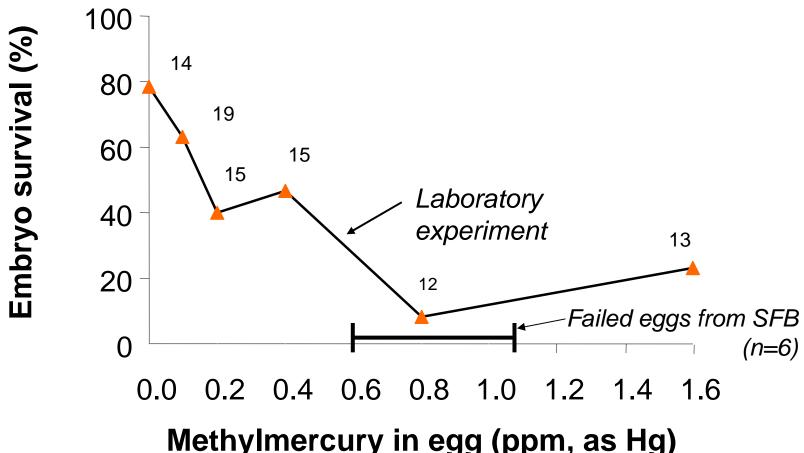
## Mercury Contamination of Striped Bass



### Methylmercury exposure: Is reproductive success being affected in California clapper rails?

Laboratory data by Heinz (USGS)

Field data by Schwarzbach & Adelsbach (FWS)



Methylmercury in egg (ppm, as Hg)

# Process for development of the Mercury Strategy

#### **Public workshop**

(review of past research)



#### **Public workshop**

(Identification of management questions, critical information gaps, goals)



Draft strategy document



Public & workshop participant review



Revisions to draft



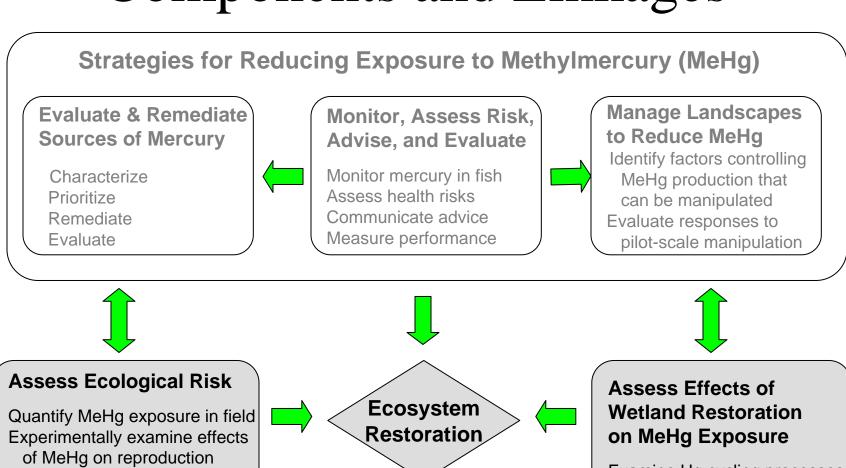
Scientific peer review

Final strategy document

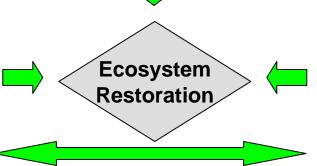
## Mercury Strategy

- A Unifying Framework for Science, Adaptive Management and Ecological Restoration
- Problem: biotic exposure to methylmercury
- Management goal: To avoid increasing and to eventually decrease biotic exposure to methylmercury

# The Mercury Strategy: Core Components and Linkages



Identify trophic pathways, areas, and habitats associated with high exposure to MeHg



Examine Hg cycling processes Identify controls on MeHg Evaluate effects on exposure

# The Scientific & Management Challenge: Reducing Exposure to Methylmercury

<u>Approach</u> <u>Objective</u>

Source reduction Decrease mercury inputs to

environment and mass

available for methylation

Fish advisories Reduce dietary exposure in

humans

Landscape management

(largely untested)

Decrease methylmercury

production in ecosystems

## Next steps

- Solicit proposals consistent with the strategy
- Develop monitoring program
- Build institutional framework to support strategy
- Develop implementation plan

## Elements of a plan

- Document past and present activities and how they relate to the Mercury Strategy
- Identify gaps
- Recommend priority activities and associated budgets